

XXI. *Life History of Cydemon (Urania) leilus*, L. By  
L. GUPPY, jun.

[Read April 10th, 1907.]

PLATES XXVI, XXVII.

IN "A Handbook to the Order Lepidoptera," by W.F. Kirby, vol. iii, p. 45 ("Lloyd's Natural History"), it is stated, "The earlier stages are unknown, for it is not possible that the larva figured by Madame Merian, with long branching spines as hard as iron wire, can belong to a *Cydemon*, in view of MacLeay's description, etc., of *C. boisduvalii*."

This statement is correct, as my description and figures of the early stages will show.

I have observed *C. leilus* carefully for years past, especially in 1901, when they swarmed all over the island, and I have netted numbers of females in a fresh and immaculate condition, and from their appearance it would seem they had not come from far; however, it always occurred to me, whatever the larvæ fed upon, if they were properly established on this island, from their numbers there would surely be some indication from the state of the vegetation to betray their whereabouts, in the shape of trees, creepers, etc., denuded of their leaves.

I may here observe, however, that as the creeper on which they *do* feed is often so much concealed by other similar and parasitic plants, that the destruction of this particular creeper might pass unnoticed; and the lofty trees in the forests on which these grow are not sufficiently under observation anyhow, especially as the season in which I discovered the eggs and larvæ is the wettest and stormiest time of the year.

In a spot about eight miles inland (due east from the town of Port of Spain), situated at the foot of the northern hills of Trinidad, on the southern side, there are a few big trees, the remnant of the virgin forest which was cut down to form the present cacao plantation, overgrown, as is always the case with our forest trees, by parasites and creepers, till there is hardly anything to be seen of the

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trees themselves. Amongst this tangled growth *Omphalea megacarpa*, Hemsley, holds a prominent place; it is known locally as the "Hunterman's Nut," the fruit being very palatable, in flavour somewhat like a Brazil nut. This creeper climbs from the ground and clings to the trunk of the trees, growing over the topmost branches and hanging down in festoons.

In September 1901, numbers of the imagines of *C. cilus* were observed by my brother, Mr. Eric Guppy, flying up and down these trees, and his statement that he saw some of them depositing eggs on the creeper during the day was subsequently verified.

On the 15th of September I made a thorough search, and was rewarded by finding about eighteen eggs; they were deposited under leaves within six feet of the ground, and the majority were found on small creepers that grew on a thick hedge near by, evidently seedlings of the large ones. The eggs are usually laid singly or in pairs on the underside of a leaf, though I found subsequently one lot of seven and another of eight, laid irregularly, fairly close together but not touching.

I was not able to examine to any height up these trees, both on account of the masses of foliage that grew on their trunks, and the ants, scorpions, tarantulas, etc., that make their homes in the hidden recesses of the bark.

#### DESCRIPTION OF EGG.

Egg spherical, and when freshly laid nearly white, suffused with a pale yellowish tint, and there are twenty about longitudinal ribs or ridges. Two or three days before hatching the eggs turn yellow.

#### LARVA.

The newly-hatched larva, which has sixteen legs, consumes the greater part of the egg-shell. Head in proportion, black and shining, like a small bead. Body white with a faint bluish tint; there are eleven black transverse lines or belts, and a sparse down which is only evident on close examination.

At this stage and after the first moult they are particularly active, and spring madly about when touched.

After the first moult the head becomes yellowish-red with black dots, and a few fine hairs. Eight long black hairs appear on the body, rising fine but becoming slightly clubbed towards the tip, which ends in a fine white point. These long hairs are situated as

follows :—two on the 2nd, four on the 3rd, and two on the 10th, segment. The legs are black, and the white on the body shows up distinctly in contrast with the black transverse lines. The 3rd and 10th segments are almost entirely black.

After the second moult two more long black hairs appear; they are situated on the 11th segment and incline backwards. The general appearance is much the same as after the first moult, black, however, predominating. The segments appear to be divided by transverse white lines when viewed laterally.

After the third moult two more long hairs appear on the 12th segment, projecting over the anal portion like a pair of tails. There is a lateral row of eight or nine white spots from the 3rd to the 11th segments, those just over the first pair of abdominal legs being larger, those on the other segments being mere specks; these spots appear on all the larvæ after the third moult. There are also from two to four reddish spots on the 1st segment, which is otherwise black; sometimes there is more of a pattern than decided spots.

As will be seen from my illustrations, the larvæ are apt to vary a good deal after the third and fourth moults.

The body generally is black and white, but irregularly and differently placed in different larvæ. Generally there is a transverse wavy black line about the middle of each segment edged with white anteriorly; sometimes there are irregular white areas edged with black, and occasionally the ground colour is greyish-lilac with broad black transverse lines, with white spots. The thoracic legs are yellowish-red, the same colour as the head, and the others whitish or flesh-coloured. The number of long black hairs on the body may differ in many larvæ at the fourth moult; two long hairs appear generally on each of the segments from the 4th to the 9th, hitherto only covered with a few fine hairs, in addition to the others on the other segments—these are straighter and finer and project laterally, the others are inclined to curl at the tips.

#### PUPA.

The pupa is light yellowish-brown, glossy, with black dots and lines; the lines on the thorax just where the wings of the future insect are encased are in imitation of neurulation marks. It lies inside a roomy cocoon of yellowish-red silk, which is like a network and through the meshes of which it can be seen. Two leaves of the creeper are fastened one above the other, and the cocoon formed between.

The transformations from the egg to the imago occupy

a period of nearly six weeks, of which two are in the pupa state.

The imago as a rule emerges during the night or early morning.

#### HABITS OF THE LARVÆ.

They are solitary, and consume cast-off skin after each moult, which takes place generally during the night or early morning.

They feed as a rule from the underside of a leaf, more often by eating a hole somewhere near the centre, and are very active, dropping immediately on being alarmed, suspended by a silken thread, and they remain suspended until the alarm is over, when they swarm up again quickly. To get from one place to another, if they discover any obstacle to their movements, or that their position is not satisfactory, they cast themselves off after making fast by a silken thread, and lower themselves until an object is reached from which it is possible to explore further.

#### HABITS OF THE IMAGO.

I am of opinion that although this moth may be seen here throughout the year, its real home is in the forests of Venezuela, from whence it migrates here annually, more or less according to favourable seasons, during the months of July, August and September; a few females here and there, however, do deposit their eggs in an erratic manner in favourable places in Trinidad, but the majority return to the continent.

In the spot where I discovered their larvæ, judging by the appearance of the creepers they were found on, there could not have been many of the larvæ about, as, though there were leaves slightly eaten here and there, there was nothing to draw attention to the fact that there were any larvæ of such a plentiful insect as *C. leilus*, especially when one considered the immense numbers that appeared in the year I made this discovery.

I am indebted to Mr. Edgell Johnstone, of Messrs. Tennants' Agency, San Fernando, for the following information in connection with their movements in the southern parts of this island:—

“As far as my observation of the ‘Green Page’ moth (local name of *C. leilus*) is concerned, I noticed them flying

both eastward and westward, and I have seen them a mile or so out to sea. . . .

"From the early part of September we had them here by the thousands, lasting for about five weeks. My boys said they were specially numerous about the hospital way, myriads being on or about some trees there. . . ."

The hospital is situated on an elevated piece of land on the sea-coast, in the town of San Fernando.

Mr. Potter, the warden of La Brea, where is situated the famous "Pitch Lake," states that they flew in thousands past the pier at La Brea, and that they congregated in numbers in the woods around there.

Might not these immense flocks that collect at these points, being suitable meeting-places on the sea-coast, assemble there to return to the continent?

It would seem that they have suitable meeting-places along the coast, from whence they return homewards, congregating in vast numbers till, like swallows, they homeward fly, in a similar manner to *C. fulgens*, which, Kirby writes, "is remarkable for its migratory habits."

They are very fond of the blossoms of a plant known locally as "Black Sage," which grows in abundance on all the waste lands in the island, and also another white flowering plant which grows in similar situations and flower at the same-period, from July to September, when the moths are most numerous.

The remarks that apply to *C. sloanus*, as quoted by Kirby in "Lloyd's Natural History," in respect to their habits when feeding and sporting around, are also applicable to *C. leilus*: "When one alights, unless it is to suck the blossom, it chooses a leaf or other surface that is nearly vertical and instantly turns head downwards, and rests with the wings expanded in the plane of the body, the anterior pair, however, inclined backwards, so as to form an angle with each other, and partly covering the posterior."

They chase each other about playfully, half-a-dozen or more sometimes joining in the gambols.

I have never observed a pairing, though there has been a lot of gambolling, and I have often observed pairs pursuing one another about most perseveringly.

In the month of September the greatest number appear, though they are plentiful in July and August; and while not very easy to capture, yet by waiting for them on a

savanna or open field, as they fly low down and all in one direction, and somewhat leisurely, until alarmed, it is possible by standing up quietly, as each one comes within reach of the net, by a rapid swoop, to catch and kill them as fast as possible.

They do not fly in flocks, but singly, and rise over all obstacles, generally in an easterly direction, and *vice versa*.

In October only solitary specimens are seen here and there. I found three eggs in the latter part of October 1901, which gave me the same number of imagines early in December 1901.

Since 1901 these moths have not been plentiful. I have seen single specimens here and there, and this may be the case for a few years to come, when quite unexpectedly they will again invade us in immense numbers.

Mr. J. H. Hart, F.L.S., was kind enough to identify the creeper on which they feed—*Omphalea megacarpa*, Hemsley.

I regret not having been able to obtain any more larvæ since 1901, as I shall be anxious to continue observations, especially in regard to the reasons for such a variety in the ground colour of the larvæ, etc.

[A very brief description of the early stages of *Urania leilus*, communicated by Herr Kappler, was published by Dr. E. Hoffman in Stett. Ent. Zeit. xlii, p. 487 (1881). The larva of the Madagascan *Urania rhipheus* has been described by Camboné, Report Int. Congress of Zoology, 1892, II, p. 180.]

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## EXPLANATION OF PLATES XXVI, XXVII.

[See Explanation facing the PLATES.]